

Claims:

1. A process for the production of alcohols, comprising:
 - (a) subjecting an olefin to a hydration reaction with water to form a reaction product including the corresponding alcohol, the olefin having a carbon chain of 2 to 12 carbon atoms, the carbon chain being selected from a linear chain and a branched chain, the reaction being conducted in the presence of a solid state olefin hydration catalyst in a reaction zone, the temperature and pressure of the hydration reaction being selected so that the olefin is largely in a vapour phase and the alcohol is in the liquid phase, the olefin being in a molar excess when compared with water, the alcohol content of the water in the reaction zone being maintained at a level to produce a product stream essentially comprising the corresponding alcohol and water; and
 - (b) simultaneously recovering the corresponding alcohol as a substantially anhydrous liquid.
2. A process according to claim 1 further comprising maintaining the alcohol content of the water in the reaction zone from 10 to 40% mole fraction.
3. A process according to claim 1 further comprising maintaining the alcohol content of the water in the reaction zone from 15 to 40 25% mole fraction.
4. A process according to claim 1 further comprising maintaining the alcohol content of the water in the reaction zone from 25 to 40% mole fraction.
5. A process according to claim 1 wherein the water in the reaction zone is subjected to mixing such that the alcohol content of the water in the reaction zone is maintained at the level to produce a product stream essentially comprising the corresponding alcohol and water as the water travels through the reaction zone.

6. A process according to claim 1 wherein the catalyst has hydrophobic properties.
7. A process according to claim 6 wherein the reaction in step (a) is effected by catalytic distillation.
8. A process according to claim 1 wherein step (a) is effected at a pressure of 0.1 to 4 MPa.
9. A process according to claim 8 wherein step (a) is effected in a temperature range of 50-225 °C.
10. A process according to claim 9 wherein the feed ratio of water to olefin is in the range of 1:3 to 1:5.
11. A process according to claim 10 wherein the pressure is about 2 kPa.
12. A process according to claim 11 wherein the olefin has a carbon chain of 2-4 carbon atoms.
13. A process according to claim 12 wherein the catalyst is a silicate, having a highly regular crystallographic structure characterized by a large surface area, and interconnected cavities within the regular structure.
14. A process according to claim 12 wherein the olefin is propene, and the corresponding alcohol is isopropanol.
15. A process according to claim 12 wherein the olefin is isobutene, and the corresponding alcohol is tertiary butanol.

16. A process according to claim 12 wherein the catalyst is disposed within the column in two separate spaced apart catalytic beds, the two catalyst beds together comprising the reaction zone.
17. A process according to claim 16 wherein step (a) is effected at a pressure of 0.1–4 MPa, and a temperature in the range of 50—225 °C.